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AUTHOR Evenson, James A.
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ABSTRACT

This paper quantifies and analyzes the total flows of human capital moving in and out of the West over time as a result of interregional migration. Particular emphasis is placed on analyzing the "age-education" interaction effect of migration on flows of human capital. Migration was highly selective of the young and/or highly educated adult. Age, education, race, and sex characteristics of migrants moving in and out of the Western divisions were determined from census data. The detailed flows were multiplied by the appropriate value of human capital (discounted earnings approach) and were then summed to determine the effects of age and education on flows of human capital. Results of the study indicate that (1) the "age-education" interaction effect is highly significant; (2) the West experienced a large increase in human capital as a result of the large net in-migration of adults from the Midwest; (3) more recently, this flow has decreased somewhat; (4) the West has been experiencing a large gain in black human capital from both the southern and northern states; and (5) a significant portion of the economic growth in the West appears, consequently, to have been subsidized by other regions, especially the Midwest. These rather large flows of human capital imply that the other regions are underinvesting in education, especially higher education. (Author)

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AGE AND EDUCATIONAL SELECTIVITY AMONG MIGRATION AND HUMAN CAPITAL FLOWS IN THE WEST

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by

James A. Evenson

Visiting Professor

Institute of Behavioral Sciences

University of Colorado

Boulder, Colorado 80302

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Introduction

Much research has been done in trying to quantify the size and characteristics of migration [6,7] and human capital [4,8,9] flows in the United States. Policy makers, in particular, have shown great interest in the characteristics, origins, and destinations of migration and human capital flows moving into and out of the West. Additional concern has been shown for the size, direction, and characteristics of migration and human capital flows moving between the Mountain and Pacific divisions (intra-regional flows).

Interest is greater when it is thought that migratns have characteristics that are significantly different from the rest of the population. Thus, concern is greatest when it appears that the migration process significantly affects an important population characteristic such as the average age, level of education, level of health, or racial composition. This increased interest stems from the emphasis placed on economic growth and possible discrimination, combined with the knowledge that stocks of human capital appear to significantly affect the process of economic growth. Consequently, the author has focused attention on quantifying the size and characteristics of human capital flows for the Western region.

Abramowitz [1] in his seminal article was able to show that much of the economic growth in the United States could not be explained with the use of traditional models of economic growth. Consequently, must attention was focused on the possible contributions of human capital to

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the process of economic growth. Schultz [10], Denison [5], and Weisbrod [16,17] have tried to quantify the stocks of human capital and/or its contribution to the process of economic growth. Thus, it appears that the rather large transfers of human capital into the West may have contributed to the rather rapid economic growth of that region.

At least three additional reasons can also be suggested for the recent interest in human capital flows caused by migration. The first is the mis-allocation of resources that may result when significant transfers of human capital occur for a specific region. Weisbrod and Swift [17] have shown that "spill-overs" of benefits to a public decision-making unit may decrease the level of public support for education, especially higher education. Thus, the existence of human capital losses for a state may be expected to exert a depressing influence on the amount of public funds allocated by that state to education.

Secondly, extremely large net flows of human capital from the Northeast, the North Central, and the South to the West has caused residents of the latter region to become concerned over the quality and the average amount of human capital possessed by both in and out-migrants. Consequently, education of our youth is no longer just a local problem. The amount of resources devoted to education in most localities or regions may vitally affect the future economic growth and leadership ability of the rest of the nation.

Finally, the Pacific division has been one of the largest net importers of Black human capital. Policy makers have shown much interest in the detailed characteristics of those net flows.

Regardless of the reasons for the heightened interest in flows of human capital, one must first quantify the size and characteristics of these human capital flows according to both region of origin and destination. The major contribution of this paper is that it quantifies the stocks and flows of human capital for the West and how characteristics such as region, age, education, race, and sex appear to affect the movements of migrants and human capital over time. Though this paper does not analyze all of the socio-economic reasons for migration, some of the data may indicate reasons to the reader.

Migration Data

A brief description of the data and the procedures required to put the data into the form required for this analysis is essential. Data were available on the level of educational attainment for the population 25 to 64 years old by division of residence in 1970, division of residence in 1965, division of birth, age, and sex for the total and Negro (Black) populations.

Individuals were classified in the 1970 Census data [14] according to their characteristics as of April 1, 1970. Adults were initially listed according to their region of residence in 1970.[1] After that the 1970 population was classified according to age (25-34, 35-44, 45-54, and 55-64), color (negro and total), level of educational attainment (the six categories are:[2] Elementary: less than 8 years, 8 years; High School: 1-3 years, 4 years; College: 1-3 years, 4 years or more), and sex.

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[1] There are nine divisions of residence which are shown as follows: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific.

[2] In order to make things easier I have labeled these intervals: <8, 8, 9-11, 12, 13-15, and 16+.

Individuals were placed in a particular row in the census data according to their age, level of educational attainment, color, sex, and division of residence on April 1, 1970. The column an individual was placed in was determined by the individual's region of residence on April 1, 1965. There were ten such columns: one for each of the nine economic divisions and a tenth for those people who were abroad in 1965 or whose residence was not reported in 1965.

Data on out-migration were quite difficult to obtain. For example, the outmigrants from the Pacific region (division) were found by calculating the number of adults in-migrating to the other eight regions from the Pacific region. This procedure was performed for each region and for all detailed characteristics of the population within that region. These entries were then summed horizontally (across divisions) to obtain total out-migration for each age-education-race-sex category. The 1965 population for each category was found by adding the appropriate entries for non-migrants and total out-migration.[3]

Each basic data table provides data on in, out, and net-migration from the region under consideration to all of the other regions according to the age, sex, color, and level of educational attainment of the migrants in question. A total of 248 basic data tables were thus constructed for the time period 1965-70.

The same type of data were collected for the time period April 1, 1955 to April 1, 1960 and a total of 288 basic data tables were tabulated.

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[3]This entry is not the "true" number of persons residing in the region in 1965 because it ignores those people in the category "other." This entry, however, is the appropriate base to use in determining rates of in- or out-migration.

However, these tables had to be rearranged so as to make the data comparable to that collected for 1965-70. Data for 1955-60 were made comparable to that in 1965-70 by summing the appropriate age categories (i.e., 25-29 + 30-34 = 25-34) and by summing the people with less than 5 years of schooling together with those with 5-7 years of elementary schooling (i.e., <5 + 5-7 = <8).

It was assumed that the non-white population was comparable with what was later called the Black population which was the classification used in the Census when the data were collected for the time period, 1965-70. This assumption appears to present no serious problem since approximately 99 percent of the non-whites in the South are Negroes (Blacks) and approximately 95 percent of non-whites in the non-South are Black. Hopefully, any distortions will be inconsequential.

In addition, the accuracy of the estimates of the flows in human capital stock resulting from migration depends upon the accuracy of the estimating procedure used to estimate the amount of human capital possessed by migrants. Human capital values were estimated using the discounted earnings approach.

The Procedure Used to Estimate Human Capital

The present value of discounted earnings was used as an estimate of the total stock of human capital resulting from all forms of investment in human capital. Estimates were derived from Census data with the following formula:

$$PV = \sum_{n=a}^{65} \frac{Y_n \cdot {}_aP_n \cdot (1 + X)^{n-a+1/2}}{(1 + R)^{n-a+1}}$$

where

Y_n = the mean annual income at age n.

${}_aP_n$ = the probability of survival from age (a) to age (n),

X = the assumed annual increase in productivity and inflation,

R = the assumed rate of discount.

The information on mean income (Y_n) was calculated from Census data [15] for 1970 while survival rates (${}_aP_n$) were derived from Life Tables. The assumed rate of discount and of productivity and inflation were 6.5 and 6.0 percent respectively. Estimates of human capital values were then assigned to the migrants (in and out) according to their level of education, age, color, and sex, for each economic region to determine the total flows of human capital and their geographical distribution. As a result, the effect of age, education, color, and sex on the rate and size of human capital flows were quantified and analyzed.

Migration rates[4] (in, out, and net) were calculated by dividing the number of migrants (in, out, and net) for a particular division, persons residing in a division in 1970 (1960) different from their division of residence in 1965 (1955), by the number of adults in that particular base population exposed to the possibility of migrating (those residing in the division in 1965 (1955). These rates are then converted to percentages. Rates (in percent) of human capital flows (Tables 1-3) are identical to rates of migration except for the percentages in the total rows. By definition, the rate of migration must equal the rate

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[4] The denominator is equal to non-migrants and those out-migrants who left the division. The data ignores multiple moves and persons who died between 1965-70 (1955-60). Finally the data ignores the persons in the category "other" (abroad in 1965 (1955) or division of 1965 (1955) residence unknown).

of change in human capital because the numerator and denominator are both multiplied by the same value, the amount of human capital possessed by adults with that particular combination of age, education, race and sex. The total rate of change in human capital (total row) for each age category varied slightly from the respective rate for migration because the distribution of the migrants across educational categories was not equal.

Import of Human Capital and Migrants

Percentage rates of change in human capital for the Mountain and Pacific regions (divisions) are presented in Table 1 according to various categories of age, education, race, and sex over time. Generally, the rate of inflow of human capital (or migration) decreased with age if race, sex, and level of education were held constant. This is not unexpected because the ratio of expected benefits to costs of a move for older people is likely to be less than the corresponding ratio for younger adults for several reasons. First, the expected benefits would accrue over fewer years and secondly the psychological costs of dislocation might be greater for the older person. Finally, older people who have not migrated and who have been exposed to the possibility of previous migration have shown themselves to be less mobile.

In general, in-migration was more selective of the younger adults and the percentage rates of in-migration (or human capital) for adults in the youngest age category are approximately 3-5 times larger than the corresponding rates for older adults. This same pattern tends to hold for both categories of sex and race. However, among Blacks there was a small tendency for the rates to increase slightly in the oldest

TABLE 1

IMPORTS OF MIGRANTS AND HUMAN CAPITAL INTO THE WESTERN DIVISIONS ACCORDING TO VARIOUS CATEGORIES OF AGE, EDUCATION, COLOR, AND SEX OVER TIME*
(In Percent)

Division	Level of Education	Time Period	Age															
			White								Black							
			Male				Female				Male				Female			
			25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64
Pacific	< 8	1955-60	21.40	12.23	8.02	5.30	18.65	11.60	8.25	7.10	16.96	7.87	3.44	2.43	12.48	7.21	5.7	5.37
		1965-70	11.01	7.17	4.50	3.07	9.31	6.28	4.91	4.30	19.57	10.36	3.96	2.56	16.64	9.17	6.00	5.95
	8	1955-60	22.21	13.16	7.24	4.80	19.29	12.12	7.79	6.51	16.90	7.32	4.31	3.73	15.94	5.86	6.03	6.34
		1965-70	13.91	7.74	4.32	3.02	12.84	7.58	4.70	4.18	21.23	7.07	4.14	2.30	22.73	10.17	6.05	4.58
	9-11	1955-60	18.65	11.80	6.65	4.64	17.02	11.20	6.46	5.88	18.66	7.71	4.63	2.87	16.42	7.64	6.47	7.12
		1965-70	11.90	7.01	3.82	2.85	11.86	7.30	4.48	3.76	19.02	9.80	4.26	2.58	16.64	8.17	4.42	5.29
	12	1955-60	19.78	11.02	6.33	4.76	18.02	10.38	6.11	5.64	16.06	6.02	4.05	2.70	12.64	5.77	5.04	5.21
		1965-70	14.11	8.69	4.50	2.84	12.76	7.57	4.50	3.76	19.98	11.00	3.93	2.23	17.65	7.70	5.12	4.00
	13-15	1955-60	19.99	12.56	7.71	5.48	21.29	10.78	6.96	5.93	18.22	8.87	6.08	3.71	16.47	8.20	7.08	7.22
		1965-70	14.83	8.54	5.69	3.39	16.16	8.18	5.05	3.71	17.51	10.33	5.06	2.86	16.44	5.52	4.24	3.07
	16+	1955-60	35.60	17.16	10.27	7.04	30.28	13.18	7.37	5.99	28.65	13.34	5.64	3.36	26.04	10.76	8.61	6.78
		1965-70	31.86	12.70	8.09	5.32	28.57	10.38	6.22	4.39	37.14	11.42	8.08	5.39	40.90	13.37	6.34	4.10
	Total	1955-60	24.15	13.23	7.64	5.33	20.29	11.11	6.79	6.07	19.01	7.99	4.27	2.89	15.99	7.14	6.19	5.98
		1965-70	19.58	9.81	5.67	3.53	16.68	8.13	4.91	3.93	20.95	10.32	4.60	2.70	19.86	8.32	5.11	4.75
Mountain	< 8	1955-60	17.32	14.65	9.35	7.51	14.70	10.63	7.79	7.80	8.51	8.95	8.59	4.53	5.63	6.48	5.47	3.38
		1965-70	11.90	9.02	5.99	5.11	9.48	6.72	5.48	5.59	19.72	11.73	7.60	5.62	12.85	9.61	8.16	5.58
	8	1955-60	21.90	15.42	11.14	8.30	19.53	13.27	10.87	9.98	15.99	11.02	9.97	11.26	11.78	9.07	9.10	6.86
		1965-70	14.32	10.84	7.09	6.82	12.54	9.09	7.93	8.54	10.43	18.25	1.99	6.51	13.45	7.22	4.48	5.96
	9-11	1955-60	23.96	18.22	12.51	9.47	23.26	16.27	11.58	9.40	24.38	14.18	12.36	5.40	16.80	13.57	11.06	8.43
		1965-70	17.10	12.64	8.41	7.73	17.11	12.27	8.43	8.53	22.94	10.30	5.86	6.93	20.46	11.50	7.83	4.75
	12	1955-60	26.65	18.97	13.11	10.30	25.60	18.18	12.29	10.48	30.94	14.36	13.71	17.74	25.64	10.06	7.96	10.98
		1965-70	21.75	15.03	13.71	8.08	21.08	13.38	9.15	9.06	32.86	27.50	7.43	8.29	24.80	17.67	13.15	12.48
	13-15	1955-60	33.71	22.96	14.59	11.78	31.58	19.79	11.72	10.38	36.77	11.85	16.18	4.55	35.04	18.35	17.01	11.30
		1965-70	27.76	18.35	11.59	10.60	26.31	15.11	10.81	10.04	41.40	26.12	8.44	8.78	30.78	22.58	11.39	8.14
	16+	1955-60	41.18	26.42	15.05	12.19	40.86	21.35	13.84	11.55	42.90	25.26	13.48	2.96	44.72	26.06	21.79	3.64
		1965-70	37.55	21.35	13.71	11.67	40.05	17.86	11.12	10.60	73.80	24.43	8.58	17.47	59.27	18.11	13.90	2.74
	Total	1955-60	30.81	20.88	13.04	9.81	27.70	17.93	11.87	10.07	24.22	13.07	10.95	6.55	20.46	11.88	9.39	5.69
		1965-70	27.56	17.01	11.67	8.75	24.97	13.93	9.47	9.16	36.02	20.81	6.72	7.62	28.43	15.80	10.12	6.70

Source: U. S. Bureau of the Census, U. S. Census of Population: 1960 and 1970, Subject Reports, Lifetime and Recent Migration, Final Report PC(2)-2D (Washington, D. C.: U. S. Government Printing Office, 1963 and 1973), Table 8, pp. 430-93 (1963) and Table 13, pp. 468-521 (1973).

*Human Capital values are calculated by multiplying the migration flows by the appropriate values of human capital.

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age categories. Data in Table 1 indicate that the effect of age varied significantly with the level of education. In almost every case the effect of age became more pronounced as education was increased.

Rates of human capital (and migrants) flowing into the West varied significantly with the level of educational attainment. The effect of education was most pronounced for those people in the youngest age category (25-34). This tendency occurred for both males and females of each race in both divisions and in both periods of time. Educational selectivity appears to be the most pronounced for young (25-34) non-whites where the rate of inflow varied from a high of 73.80 percent (16+) to a low of 5.63 percent (<8). The effect of education on adults at the older ages is much smaller and in some situations the educational effect actually became negative (rates decreased as the level of education increased). Thus, the effect of education on mobility was greatest for younger adults and small, non-existent, or even negative for older adults.

Probably the most important effect noted in Table 1 was the "inter-action" effect of age and education on movements of human capital (and migrants). Old, less educated adults tended to be immobile while young, highly educated adults were the opposite, highly mobile. Adults in the latter group were approximately 4 to 7 (Whites) and 10-15 (Blacks) times more likely to move into the Mountain and Pacific divisions than were adults in the former category.

Females tend to be less mobile than males, which is probably a reflection of a smaller expected benefit/cost ratio caused by the lower earnings profile that exists for women as compared to men. This tendency held for females of both races with the major exception being older Black females who tended to be just slightly more mobile than their male

counterpart. Generally, Blacks found the Mountain and Pacific divisions relatively quite desirable. This appears to be the case because of the relatively high rates of Black in-migration existing in the West as compared to correspondingly smaller rates in other regions of the United States.

Over time, a major trend was noted in the patterns of human capital (and migrants) moving into the western divisions. Rates of in-migration (and human capital) over time decreased for Whites and tended to increase in most categories for Blacks. A comparison of rates, over time, for Whites in both divisions in Table 1 showed that in every case the rate of inflow decreased. This change represents a rather substantial decrease in the "profile" of rates for human capital (and migrants) moving into the western divisions. A similar comparison for Blacks showed that in a majority of the cases, the rates increased, especially for adults in the younger age categories.

Exports of Human Capital or Migrants

Out-migration (of adults or human capital) rates tended to decrease with age and increase with education. Generally, out-migration "profiles" tended to be less for females than males and less for Blacks than Whites in both divisions in both periods of time. Most importantly, however, there was a substantial difference in the out-migration "profile" existing for the Mountain and Pacific divisions. The out-migration "profile" was significantly less for each particular cohort in the Pacific division as compared to the corresponding "profile" in the Mountain division. This can be seen by comparing the rates of loss in human capital for White males, at all age-education categories, in the Pacific

division (Table 2, upper left hand corner) with those for the Mountain division (Table 2, lower left hand corner).

Out-migration rates for young White adults in both divisions increased approximately 1-3 percentage points over the decade with the increases being slightly less for adults in the older age categories. More importantly, however, a highly significant "shift" occurred in the out-migration "profile" for Blacks over time. Out-migration rates for Blacks increased approximately 100 percent with the greatest increase occurring in age category (35-44). This phenomena occurred for Blacks in both divisions between time periods 1955-60 and 1965-70. This upward "shift" in the out-migration profile for Blacks in the western divisions indicates that for some reason Blacks found the region to be relatively less desirable than they did in the previous Census period. It is possible that this might represent a discouraged worker, saturation, or cultural shock effect on the part of Blacks moving to or living in the West.

Data for Blacks in the Mountain division exhibited some irregularities which may have been caused by the small number of Blacks in that division. In addition, the mobility (in and out) of younger (25-34) Blacks in the Mountain division was extremely large. Between 1965-70 the in-migration rate for Black males (16+) was nearly 80 percent while the corresponding rate for out-migration was approximately 60 percent. Both rates are extremely large indicating that there was a tremendous turnover of highly educated Blacks in the Mountain division.

TABLE 2

EXPORTS OF MIGRANTS AND HUMAN CAPITAL FROM THE WESTERN DIVISIONS ACCORDING TO VARIOUS CATEGORIES OF AGE, EDUCATION, COLOR, AND SEX OVER TIME*
(In Percent)

Division	Level of Education	Time Period	Age															
			White								Black							
			Male				Female				Male				Female			
			25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64
Pacific	< 8	1955-60	9.77	5.83	3.08	2.22	6.82	4.36	2.88	2.29	5.49	2.50	1.15	1.02	2.77	1.86	1.35	1.07
		1965-70	9.22	6.46	3.99	2.79	6.23	4.28	2.95	2.83	9.60	4.62	2.92	1.74	6.15	4.16	1.96	1.65
	8	1955-60	12.46	5.68	3.20	2.16	9.13	4.61	2.81	2.52	5.61	2.20	1.41	1.14	5.13	1.67	1.14	1.39
		1965-70	13.12	7.72	3.65	2.99	10.99	5.63	3.75	3.10	10.34	4.53	1.70	0.95	7.07	3.40	2.14	2.11
	9-11	1955-60	10.76	5.39	2.92	1.98	8.59	4.75	2.60	2.39	6.95	2.59	1.54	0.86	4.12	2.12	1.28	1.67
		1965-70	12.27	6.55	3.61	2.52	10.70	6.22	3.78	3.07	10.26	4.33	2.35	1.67	7.52	4.09	2.03	2.03
	12	1955-60	14.08	5.65	2.94	1.98	9.65	4.97	2.75	2.23	7.06	2.26	1.67	0.65	4.34	1.59	1.58	1.00
		1965-70	15.14	7.81	3.47	2.27	10.79	6.11	3.18	2.45	14.04	8.25	2.60	3.05	8.12	3.93	1.98	1.62
	13-15	1955-60	12.90	6.96	3.54	2.56	11.23	5.94	3.11	2.69	7.42	2.93	2.07	0.68	5.62	2.78	1.84	2.81
		1965-70	11.67	7.23	4.24	2.73	11.86	6.56	3.63	2.79	10.85	6.05	2.83	3.23	7.46	3.38	2.05	1.78
	16+	1955-60	17.27	8.60	5.23	3.27	13.85	7.09	3.81	2.29	10.08	4.18	2.61	0.86	7.81	3.72	2.35	1.26
		1965-70	19.35	9.81	5.74	3.41	16.19	7.62	4.11	2.93	19.83	8.18	5.50	2.52	11.70	6.15	3.85	3.66
	Total	1955-60	13.95	6.62	3.54	2.36	10.26	5.37	2.96	2.39	7.35	2.66	1.58	0.93	4.95	2.11	1.51	1.32
		1965-70	15.19	8.22	4.32	2.76	12.06	6.41	3.52	2.77	12.97	6.51	2.82	2.04	8.20	4.16	2.24	1.93
Mountain	< 8	1955-60	16.92	10.43	8.06	5.66	13.15	8.82	6.21	5.88	5.96	6.89	6.20	2.98	4.30	4.11	3.18	2.83
		1965-70	14.74	10.02	7.99	5.58	11.58	8.17	6.64	5.35	30.63	18.13	10.40	4.39	18.20	14.89	9.35	9.13
	8	1955-60	17.36	10.37	6.46	4.09	15.57	9.17	6.52	5.55	13.57	8.66	9.34	7.85	8.61	7.61	6.37	4.78
		1965-70	15.09	11.45	7.10	4.77	15.13	9.87	6.89	5.58	18.00	11.90	9.30	3.67	17.02	9.42	2.73	5.22
	9-11	1955-60	19.37	11.25	7.56	5.87	16.36	11.09	7.09	6.55	21.96	9.67	7.32	5.08	14.57	9.88	6.41	4.73
		1965-70	18.12	12.29	7.53	5.84	17.74	12.70	7.80	6.63	34.28	18.73	13.39	9.17	22.62	12.93	7.93	5.88
	12	1955-60	21.75	12.25	7.90	6.07	17.88	11.06	7.47	6.29	31.25	13.31	7.54	4.42	23.45	9.38	4.50	3.66
		1965-70	22.44	13.12	11.76	5.26	19.79	12.43	7.79	5.95	48.49	31.92	12.80	0.47	32.85	18.62	8.70	7.11
	13-15	1955-60	24.75	16.02	10.33	7.35	22.87	13.66	8.05	6.25	40.43	15.59	15.98	3.31	24.33	12.93	6.97	3.04
		1965-70	24.30	16.98	11.40	6.62	25.70	14.27	9.52	6.33	51.93	30.03	14.63	9.72	35.91	19.46	7.76	6.20
	16+	1955-60	36.49	19.43	11.35	8.83	32.04	16.65	9.82	7.12	49.08	23.92	9.72	15.38	39.63	17.18	7.50	0
		1965-70	40.79	20.78	14.12	7.88	36.56	16.68	10.51	6.36	60.64	20.14	11.37	16.27	36.26	24.61	14.20	0
	Total	1955-60	25.57	14.28	8.72	6.38	20.21	12.07	7.70	6.29	23.81	11.30	7.83	4.67	17.35	8.99	4.99	3.40
		1965-70	28.42	16.05	11.26	6.07	23.80	13.30	8.47	6.15	45.88	24.42	12.09	5.94	30.73	17.58	8.51	6.50

Source: U. S. Bureau of the Census, U. S. Census of Population: 1960 and 1970, Subject Reports, Lifetime and Recent Migration, Final Report PC(2)-2D (Washington, D. C.: U. S. Government Printing Office, 1963 and 1973), Table 8, pp. 430-93 (1963) and Table 13, pp. 468-521 (1973).

*Human Capital values are calculated by multiplying the migration flows by the appropriate values of human capital.

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The Net Balance of Human Capital and Migration

The addition of out-migration (-) and in-migration (+) equals net-migration. Data on net-migration are the most useful for many purposes but it is a prerequisite that one understand the patterns of in and out-migration so as to better understand how a net figure develops. Net rates for human capital and migration flows for both divisions are shown in Table 3.

Perhaps the most striking observation is that between 1955 and 1960 both divisions experienced rather large net in-flows of human capital and migrants. Net inflows occurred at 189 of the 192 possible subtotal categories shown in Table 3. The three exceptions were for young (25-34) Black males in the three highest levels of education in the Mountain division. By 1965-70 the situation had changed quite significantly in both divisions. The Pacific division remained a net importer of human capital at 93 of 96 possible categories, however, the rates of in-migration had decreased substantially for Whites in that division. Net flows (rates) of human capital into the Pacific division for Blacks tended to decrease but in several instances actually increased (in 5 of 96 possible age-education categories). In the Mountain division, the situation had changed even more drastically. Net losses occurred in 48 of the 96 possible age-education categories. A majority of these net losses occurred among Blacks and less educated Whites (all ages).

White flows (rates) of human capital into the Pacific division decreased approximately 60 percent in the youngest age category (25-34) and approximately (70-75) percent in the older age categories. The same tendency occurred among Blacks, but to a lesser degree, with the

TABLE 3

NET FLOWS OF MIGRANTS AND HUMAN CAPITAL FOR THE WESTERN DIVISIONS ACCORDING TO VARIOUS CATEGORIES OF AGE, EDUCATION, COLOR, AND SEX OVER TIME*
(In Percent)

Division	Level of Education	Time Period	Age: White Male 25-34	White Male 35-44	White Male 45-54	White Male 55-64	White Female 25-34	White Female 35-44	White Female 45-54	White Female 55-64	Black Male 25-34	Black Male 35-44	Black Male 45-54	Black Male 55-64	Black Female 25-34	Black Female 35-44	Black Female 45-54	Black Female 55-64
Pacific	< 8	1955-60	11.63	7.40	4.94	3.08	11.83	7.24	5.37	4.82	11.46	5.37	2.29	1.42	9.71	5.35	4.38	4.31
		1965-70	1.79	0.70	0.52	0.28	3.09	2.00	1.95	1.47	9.96	5.73	1.03	0.82	10.50	5.00	4.04	4.31
	8	1955-60	9.75	7.48	4.05	2.64	10.16	7.50	4.99	3.99	11.29	5.12	2.90	2.59	10.81	4.18	4.88	4.95
		1965-70	0.79	0.02	0.67	0.04	1.85	1.95	0.95	1.08	10.89	2.54	2.43	1.35	15.67	6.77	3.91	2.47
	9-11	1955-60	7.89	6.41	3.73	2.66	8.44	6.46	3.86	3.50	11.71	5.12	3.09	2.01	12.30	5.53	5.19	5.44
		1965-70	-0.37	0.46	0.21	0.33	1.16	1.08	0.70	0.69	8.76	5.07	1.91	0.91	9.11	4.07	2.39	3.26
	12	1955-60	5.70	5.37	3.39	2.78	8.37	5.41	3.35	3.41	9.00	3.77	2.18	2.05	8.30	4.18	3.46	4.21
		1965-70	-1.03	0.88	1.03	0.57	1.96	1.46	1.33	1.31	5.94	2.74	1.33	-0.82	9.53	3.78	3.14	2.38
	13-15	1955-60	7.08	5.60	4.17	2.93	10.05	4.84	3.85	3.25	10.80	5.94	4.01	3.03	10.85	5.43	5.24	4.41
		1965-70	3.16	1.31	1.45	0.66	4.31	1.62	1.42	0.91	16.66	4.28	2.32	-0.37	8.98	2.15	2.19	1.29
	16+	1955-60	18.34	8.56	5.04	3.77	16.44	6.09	3.56	3.70	18.57	9.16	3.03	2.50	18.23	7.04	6.26	5.51
		1965-70	12.51	2.89	2.36	1.91	12.37	2.76	2.11	1.46	17.32	3.23	2.58	2.87	29.20	7.21	2.49	0.43
	Total	1955-60	10.19	6.61	4.10	2.97	10.04	5.74	3.83	3.68	11.66	5.33	2.69	1.96	11.04	5.03	4.68	4.62
		1965-70	4.38	1.59	1.35	0.77	4.58	1.71	1.39	1.16	7.98	3.82	1.78	0.66	11.66	4.16	2.87	2.82
Mountain	< 8	1955-60	0.40	4.22	1.29	1.85	1.56	1.81	1.59	1.92	2.61	2.05	2.39	1.54	1.33	2.37	2.30	0.54
		1965-70	-2.83	-0.82	-2.00	-0.47	-2.10	-1.44	-1.16	0.24	-10.92	-6.40	-2.80	1.23	-5.35	-5.28	-1.20	-3.55
	8	1955-60	4.54	5.05	4.69	3.21	3.95	4.10	4.35	4.43	2.42	2.36	0.63	3.40	3.17	1.46	2.73	2.03
		1965-70	-1.38	-0.61	0	2.05	-2.58	-0.79	1.04	2.95	-7.57	6.35	-7.31	2.84	-3.57	-2.20	1.75	0.75
	9-11	1955-60	4.59	6.97	4.95	3.60	6.90	5.18	4.49	2.85	2.42	4.52	5.05	0.32	2.23	3.69	4.64	3.70
		1965-70	-1.02	0.35	0.88	1.88	-0.63	-0.43	0.63	1.90	-11.34	-8.42	-7.53	-2.23	-2.16	-1.44	-0.10	1.13
	12	1955-60	4.89	6.71	5.21	4.24	7.72	7.12	4.82	4.19	-0.31	1.05	6.16	13.05	2.19	0.69	3.47	7.32
		1965-70	-0.70	1.91	1.95	2.82	1.29	0.96	1.35	3.11	-15.63	-4.42	-5.37	7.82	-8.05	-0.95	4.45	5.37
	13-15	1955-60	8.96	6.93	4.26	4.45	8.71	6.13	3.67	4.13	-3.66	-3.75	0.21	1.24	9.72	5.42	10.04	8.26
		1965-70	3.46	1.37	0.19	3.98	0.61	0.85	1.29	3.66	-10.53	-3.92	-6.19	-0.94	-5.13	3.12	3.63	1.94
	16+	1955-60	4.69	6.99	3.70	3.36	8.82	4.69	4.03	4.43	-6.18	1.34	3.76	-12.43	5.08	8.88	14.29	3.64
		1965-70	-3.24	0.57	-0.42	3.79	3.49	1.18	0.61	4.21	13.16	4.29	-2.79	1.20	23.00	-6.50	-0.30	2.74
	Total	1955-60	5.24	6.60	4.31	3.43	7.49	5.86	4.17	3.77	0.41	1.77	3.12	1.88	3.11	2.89	4.40	2.29
		1965-70	-0.86	0.96	0.41	2.68	1.17	0.63	1.00	3.01	-9.86	-3.61	-5.37	1.68	-2.30	-1.78	1.61	0.11

Source: U. S. Bureau of the Census, U. S. Census of Population: 1960 and 1970, Subject Reports, Lifetime and Recent Migration, Final Report PC(2)-2D (Washington, D. C.: U. S. Government Printing Office, 1963 and 1973), Table 8, pp. 430-93 (1963) and Table 13, pp. 468-521 (1973).

*Human Capital values are calculated by multiplying the migration flows by the appropriate values of human capital.

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exception of young (25-34) Black females where a small increase (from 11.04 to 11.66 percent) was noted. These same tendencies occurred in the Mountain division, except for young (25-34) highly educated (16+) Blacks, where a large increase occurred in the rate of net in-migration.

Net in-flows (rates) of White human capital decreased largely because of a small overall increase in the rate of loss (out-migration) and a rather substantial decrease in the rate of gain (in-migration). Net in-flows of Blacks decreased because of a phenomenal increase in the overall rate of out-migration, even though a significant increase was noted in the overall rate of in-migration. Thus, the migration of Blacks into the western divisions increased but was outweighed by the large increase in out-migration.

Regional Flows of Human Capital and Migrants

We have considered the rates of in, out, and net-migration (and human capital) and how they varied with age, education, race, sex, and division over time. Origins and destinations of migrants and human capital moving to and from the Mountain and Pacific divisions over time are also of importance. These flows are shown in Table 4. A total of 1,232,952 and 560,626 people migrated in and out of the West (Mountain and Pacific divisions combined), respectively between 1955-60 which resulted in the net in-migration of 672,326 people. By 1965-70 the total number moving in had decreased to 1,087,152 people while out-migration had increased to 849,423 people. Consequently net in-migration decreased to 237,729 people. Net in-flows of human capital decreased from 121,337.33 to 52,037.29 million dollars during the same period of time. It is interesting to note that net in-migration was 120 percent

TABLE 4

INTER-DIVISION FLOWS OF MIGRANTS AND HUMAN CAPITAL FOR THE MOUNTAIN AND PACIFIC DIVISIONS OVER TIME*

			Northeast		North Central		South			West		
			Divisions									
		Western Division	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	Total
MIGRANTS	1955-60	Mountain	10,331 6,893 +3,438	33,111 14,792 +18,319	80,499 31,455 +49,044	97,279 41,112 +56,167	32,642 23,846 +8,796	13,336 8,567 +4,769	84,945 54,167 +30,778		131,562 164,926 -33,364	483,705 345,758 +138,167
	1965-70	Pacific	54,960 21,991 +32,969	138,573 46,567 +92,006	219,427 70,953 +148,474	162,238 60,795 +101,443	117,362 78,016 +39,346	39,553 20,844 +18,709	148,696 80,628 +68,068	164,926 131,562 +33,364		1,045,735 511,356 +534,379
	1955-60	Mountain	13,131 10,331 +2,800	38,216 22,726 +15,490	76,369 48,502 +27,867	81,416 53,742 +27,674	40,575 41,063 -488	11,687 11,483 +204	62,478 74,337 -11,859		164,123 199,976 -35,853	487,995 462,160 +25,835
	1965-70	Pacific	52,522 36,138 +16,384	129,473 72,641 +56,832	174,387 119,263 +55,124	116,113 81,055 +35,058	132,379 126,876 +5,503	36,318 30,649 +5,669	122,088 120,617 +1,471	199,976 164,123 +35,853		963,256 751,362 -211,894
HUMAN CAPITAL**	1955-60	Mountain	2,228.05 1,672.75 +555.30	6,723.28 3,642.16 +3,081.12	15,127.54 6,960.60 +8,166.94	18,545.40 8,409.96 +10,135.44	7,089.68 5,372.66 +1,717.02	16,347.68 1,829.02 +782.40	10,303.43 +6,044.35		25,031.15 31,939.27 -6,908.12	93,740.94 70,129.86 +23,611.08
	1965-70	Pacific	11,390.57 5,077.50 +6,313.07	27,783.93 10,802.60 +16,981.33	42,506.42 15,825.60 +26,680.82	30,789.76 12,469.66 +18,320.10	25,125.33 16,863.32 +8,262.01	7,253.07 4,399.30 +2,853.77	26,691.67 15,247.88 +11,443.76	31,939.27 25,031.15 +6,908.12		203,479.52 105,708.71 +97,770.81
	1955-60	Mountain	3,130.76 2,723.62 +407.14	8,463.21 5,844.26 +2,618.95	15,819.85 11,211.12 +4,608.73	17,542.29 11,652.33 +5,889.96	9,349.31 9,516.97 -167.66	2,657.19 2,456.71 +200.48	13,435.80 15,286.78 -1,850.98		33,748.02 43,092.37 -9,344.32	104,146.43 101,784.14 +2,362.29
	1965-70	Pacific	12,938.14 9,010.07 +3,928.07	29,514.83 18,062.22 +11,452.61	39,332.71 27,203.03 +12,129.68	25,571.79 17,663.90 +7,907.89	30,600.68 28,710.79 +1,889.89	7,798.97 6,294.35 +1,504.62	24,984.67 23,466.76 +1,517.91	43,092.34 33,748.02 +9,344.32		213,834.13 164,159.14 +49,675.03

Source: U. S. Bureau of the Census, U. S. Census of Population: 1960 and 1970, Subject Reports, Lifetime and Recent Migration, Final Report PC(2)-20 (Washington, D.C.: U. S. Government Printing Office, 1963 and 1973), Table 8, pp. 403-93 (1963) and Table 13, pp. 468-521 (1973).

*Lines 1, 2, 3 of each row section respectively stand for in, out, and net flows of migrants, and/or human capital.

**In millions of 1974 dollars.

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of total amount of out-migration in 1955-60 but had decreased to 28 percent of the same figure by 1965-70.

An analysis of the data in Table 4 shows that the total number of migrants moving into the West between 1955-60 was 672,326 people. This figure is found by adding total net in-migration for the Mountain division (+138,167) with that for the Pacific division (+534,379). Net migration into the West from the Northeast, North Central, and Southern regions was 146,732, 355,128, and 170,466 people respectively. Over half of the net in-migrants came from the North Central region (East and West North Central divisions). However, a majority of these migrants moved into the Pacific and not the Mountain division, even though the latter was closer to these divisions. Overall rates of in and out-migration for the Mountain (Pacific) division between 1955-60 were 17.61 (11.61) and 12.58 (5.67) percent. Both the in and out-migration rates were less for the Pacific division as compared to the Mountain division, but the net difference was greatest for the Pacific division.

Total in, out, and net flows of human capital for the West during the same period of time were 204,213.77, 118,876.44, and 121,337.33 million dollars. Net flows of human capital into the West from the Northeast, North Central, and Southern regions were 26,930.82, 63,303.30, and 31,103.21 million dollars respectively. During this same period of time there was a rather large net flow of migrants and human capital (equal to 33,364 people and 6,908.12 million dollars) from the Mountain division to the Pacific Division.

By 1965-70 a rather significant decrease had occurred in the net flows of migrants and human capital moving into the West from the other

regions. Net in-migration had decreased from 672,326 people (1955-60) to 237,729 people (1965-70). Net flows of migrants moving into the West from the Northeast, North Central, and Southern regions in 1965-70 were 91,506, 145,723, and 500 people. The largest decreases were for the North Central and Southern regions. It is interesting to note that the net in-flow of human capital from the South was 3,094.26 million dollars even though the net amount of in-migration was only 500 people. This suggests that the West was exporting people to the South who possessed relatively small amounts of human capital as compared to those it was importing. The total net flow of human capital into the West between 1965 and 1970 was 52,037.29 million dollars of which approximately 95 percent accrued to the Pacific division. The overall rates of net in-migration for the Mountain (Pacific) divisions were 0.79 (1.94) percent, down from the 5.03 (5.93) percent that existed in 1955-60.

Transfers of migrants and human capital from the Mountain to the Pacific division increased over time to 35,853 people and 9,344.32 million dollars respectively. In addition, the Mountain division actually became a net exporter of people and human capital to the South Atlantic and West South Central divisions in the latter time period.

Summary and Conclusions

Interregional flows of migrant and human capital moving in and out of the West deserve and require additional research. It would be helpful if this additional research would include an extensive examination of additional socio-economic data which might possibly better explain the existing patterns of migration and human capital for the West. The results of this paper should be viewed as a subset of this much larger

and comprehensive study. However, this does not prevent one from offering several observations concerning the size and characteristics of migration and human capital flows moving in and out of the Mountain and Pacific divisions (West) over time. These observations are as follows:

1. Rates of both in and out-migration in both divisions were significantly greater for those adulst in the youngest age category (25-34) and who were also the most highly educated (16+). This may be referred to as the "age-education interaction" effect which suggests that mobility is extremely high for adults in this category.

2. Rates of in-migration for the Pacific division were generally greater than comparable rates for out-migration between 1955-60. Consequently, the overall net rate of in-migration for the division was 5.93 percent in the earlier time period. By 1965-70 the overall profile (rates) of in-migration for the Pacific division had declined sharply while the same profile for out-migration had increased, causing a substantial reduction in the amount (and rate) of migrants moving into the Pacific division.

3. These same tendencies and trends (mentioned above) that existed for the Pacific division apply to the Mountain division except for an increase in the net flow of migrants and human capital moving from the latter to the former division (intra-regional flows) during the same time period.

4. During both time periods, the Pacific division was a net importer of both migrants and human capital from "each" of the other eight divisions. Over time, it also experienced the largest total net gain in

migrants, behind the South Atlantic division. The latter trend indicates that the migration process for the Pacific division was highly selective of adults who possessed large amounts of human capital.

5. A large percentage of migration and human capital flows moving into the Mountain and Pacific divisions (West) over time were from the East and West North Central divisions. Over time these net flows moving into the Western region tended to decline, especially those from the Southern divisions. These rather large net flows of human capital into the West suggest that other regions of the country have been subsidizing economic growth and development in the West if the latter is significantly affected by the size of regional stocks of human capital.

6. Relatively large net flows of Blacks, especially those who were young and/or highly educated, moved West to the Pacific division from all of the other regions. Over time, the overall rate of in-migration for Blacks moving into the Pacific division increased but was more than offset by the even larger increase in the overall rate of out-migration. These same tendencies existed for Blacks in the Mountain division except that in the latter time period the Mountain division was actually a net exporter of people and human capital to the Southern region.

7. These tendencies and trends offer further evidence that factors affecting levels of educational attainment, discrimination, leadership, and migration are national policy questions and not just regional problems. For example, "spill-overs" of benefits from one division to another may result in a mis-allocation of resources, because the division of origin may not be considering benefits that accrue to another division as a result of the out-migration of its young and highly educated adults. In addition, it appears that rural areas have subsidized economic growth in the more urban areas as a result of net losses in human capital to these areas.

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